Mercy Wangui Muiruri

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EDUCATION

Northwestern University Evanston, IL
Bachelor of Science in Computer Science, Minor in Machine Learning and Data Science
Cumulative GPA: 3.67 Expected Graduation: **June 2027**
Relevant Coursework: Artificial Intelligence, Linear Algebra, Statistics, Data Engineering, Data Structures and Algorithms, Scalable Software Architectures, Programming in C, C++ and Python, Computer Memory, Software Design
Languages/Frameworks/Tools: Python, R, SQL, C++, C, JavaScript, React, SQL, Docker, AWS
Machine Learning: TensorFlow, TensorFlow-GPU, PyTorch, Keras, Pandas, Numpy, Matplotlib, Os, scikit-learn, CUDA, AWS Rekognition AI

PROJECTS

Cloud Native Photo App | *AWS, MySQL,* January 2024 - Current
- Created a client-side photos app using AWS S3 and integrated MySQL and SQLite into AWS RDS database allowing for multiple user accounts to store their images in the cloud and containerized the service using **Docker**
- Integrated AWS Rekognition AI, enabling users to search for specific images using automated image tagging and content filtering, improving user search functionality by 35%

Audio Recognition Model | *Tensorflow, NumPy* December 2024 - January 2025
- Designed a convolutional deep neural network for audio classification, achieving 95% accuracy in detecting specified audio, by stacking multiple convolutional and dense layers to capture patterns
- Preprocessed and segmented large audio files, cutting data overloading by 30% using Tensorflow IO to convert waveforms to Numpy arrays for partitioning and batch processing to form a data pipeline

Toxic Comment Filter | *Matplotlib, Tensorflow* December 2024 - Current
- Developed a multi-headed deep learning model for detecting comment toxicity; achieving a 97% accuracy by building a Sequential model using Tensorflow Keras API, Embedding, Dense layers and a Sigmoid activation
- Evaluated model by creating an interactive web UI for real-time classification using Gradio which allowed users to input comments and visualize predictions for toxicity levels using Matplotlib

Data Acquisition Interface | *Python, customTkinter* September 2024 - Current
- Built a web interface in Northwestern's Formula Racing club for visualizing data from all car's sensors to run tests and fix design flaws, leading to a 15% improvement in engine performance
- Used Python for backend integration and customTkinter libraries to create a responsive UX allowing for both real-time and static graphing using matplotlib

EXPERIENCE

Northwestern University Formula Racing | *Software Engineer* September 2023 - Current
- Prototyped CAD design for PCB using Eagle and conducted functional unit tests on product improving accuracy of the tool by 10% and boosted data transmission efficiency by 25% using CAN Bus protocols
- Designed and implemented object-oriented C++ algorithms for real-time vehicle suspension system simulations and developed automated testing protocols enhancing code reliability and scalability

Caregivers Network Africa | *Front Engineer* June 2024 - August 2024
- Engineered a responsive web application which increased engagement by 20% by utilizing React, JavaScript and Tailwind to deliver a scalable front-end to users
- Increased codebase modularity leading to a 30% decrease in website load time and 99% uptime frequencies through code-cleanup, refactoring components and leveraging Netlify's continuous deployment features

LEADERSHIP

CS Teaching Assistant | *Data Structures and Algorithms* January 2025 - Current
- Collaborated with faculty and graduate TAs and a team of 15 students to grade coding projects and assignments and develop assessments for algorithmic problem-solving
- Conducted weekly sessions for code reviews for 170 students; assisting in debugging and bug fixes as well as unit testing to ensure accuracy